



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

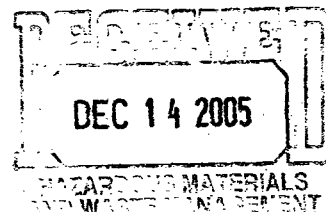
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Ref: EPR-PS-TAU

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Mark,

Several members of the EPA Region 8 Superfund Technical Assistance Unit have reviewed the "Draft Lead Health Risk Assessment for Rico Townsite Soils (dated July 1, 2005)" and we have the following comments and observations.

**General Comments:**

In general, EPA national guidance (in the *Guidance Manual for the Integrated Exposure Uptake Biokinetic [IEUBK] Model for Lead in Children* (EPA 1994)) recommends use of default values in the IEUBK model unless site-specific data are available which suggest that the default values are not appropriate for the conditions at a particular site. In the absence of site-specific measurements, emphasis should be placed on the IEUBK model predictions using default values (specific guidance on the model, default parameters and development of site-specific values is available through EPA's Technical Review Workgroup, see <http://www.epa.gov/superfund/programs/lead/trw.htm>). However, with that said, EPA Region 8 risk assessors and risk managers have considered other values when assessing sites within the region. The most important and sensitive inputs to the model for Rico include the following:

Soil-to-dust correlation coefficient

Although no site-specific data were collected for lead concentrations in indoor dust at Rico, the relationship between soil and indoor dust has been quantified for numerous CERLCA sites here in Region 8. The slopes of the soil to dust relationship observed at a number of mining and smelting sites in the region have been considerably lower than the default value of 0.7 used in the IEUBK model. We suggest using the IEUBK model default value (0.7) as the starting point, but then explore the use of soil-to-dust correlation coefficients observed in this Region (as described in the draft report).

Soil Ingestion Rate

The soil ingestion studies conducted by Calabrese and Stanek at Anaconda, as well as other

researchers around the country, illustrate that there is a great deal of variability and uncertainty pertaining to childhood soil ingestion rates. Again, we suggest using the IEUBK model default values as a starting position and then explore the use of alternative values, or perhaps consider an analysis using a probability distribution function. We have done this for other Region 8 sites (e.g. Leadville).

### GSD

Based on the methodology recommended in the Guidance Manual for the IEUBK model and relatively large data sets from several Utah sites (Bingham Creek and Sandy City), where blood lead data were collected in conjunction with environmental data, Region 8 has calculated inter-individual GSDs of 1.4. This value has been considered at mining and smelting sites across the Region for several years. Again we suggest using the IEUBK default value (1.6) and other potential values (such as the regional value of 1.4) for exploratory analysis.

### **Other specific observations and recommendations include:**

- Blood lead testing of voluntary residents from Rico was reportedly conducted. Are there any data available at this time? Issues for your consideration include representativeness of blood lead data and time of year when such data were collected.
- Suggest that additional information be included in Table A-1 for each property such as: Property ID or location, total number of incremental samples taken for the property if variable, total number of composites derived from the incremental samples, if variable; results of the individual composite samples from the property, "Input Pb Concentration used for EPC calculation", and Zone. All data should be clear and transparent with regard to the results derived for each property and how all exposure point concentration and upper confidence limit values used for the HHRA were derived.
- Why were only 25 of the 30 identified commercial /industrial use properties sampled? What is the basis for not sampling the other five properties?
- It appears that there may be insufficient representative sampling data (1-2 samples available per property) for the industrial/commercial and recreational properties included in this analysis. It is not clear as to why 5-point composite samples were only taken for residential properties and not for other areas of concern.
- Bioavailability values for the IEUBK model. In-vitro assays were used to evaluate two sets of soil samples (28 samples) taken from the Rico site to determine the site specific relative bioavailability relative to the default (60% relative bioavailability) for the IEUBK model. The average lead relative bioavailability taken from the two data sets were 64% and 68%. The value of 68% (0.34 absolute bioavailability) chosen for the Rico Site for the IEUBK models appears appropriate.

- Values for use in the ALM Model. For the Adult Lead Model (ALM) a lower biokinetic slope factor of 0.375 ug/dL per ug/day value was chosen versus the default value that EPA typically uses for the model (4.0 ug/dL per ug/day). Also, a GSD value of 1.8 was chosen for the Rico Site versus the EPA default value of 2.1. An adult lead absorption factor based on O'Flaherty (1993) of 0.08 was used versus the EPA default of 0.12. Based on site-specific lead bioavailability data, a value of 0.054 was used instead of the EPA default of 0.048. Lastly, an exposure frequency of 40 days/year was chosen (for recreational exposure frequency) based on professional judgment (factors considered included seasonal weather conditions, snow cover, high altitude etc.) about worker usage/exposure patterns at the Rico Site versus a default of 250 days/year (for indoor worker exposure). Given the sensitivity of the assumed exposure frequency in determining the RBC, further consideration of some alternative values may be appropriate.
- Risk estimate calculations used for IEUBK & ALM Models vs USEPA Default Values are summarized below:

Parameter	Value Used Rico HHRA	EPA Default Values
<b>IEUBK MODEL</b>		
Soil to Dust K factor	0.30	0.70
Age-dep. Soil Intake (mg/day)	68	200
Dietary lead intake (ug/day)	-	-
0-11 months	1.82	3.16
12-23	1.90	2.60
24-35	1.87	2.87
36-47	1.80	2.74
48-59	1.73	2.61
60-71	1.83	2.74
72-84	2.02	2.99
GSD	1.4	1.6
Relative Bioavailability	68%	60%
<b>ALM MODEL</b>		
Biokinetic Slope Factor (ug/dL)	0.375	0.4
GSD	1.8	2.1
Baseline BLL (ug/dL)	1.5	1.5
Soil Ingestion (g/day)	0.05	0.05
Bioavailability	0.054	0.048
Absorption Fraction	0.08	0.12
Exposure Frequency (days/year)	40 (recreational)	250 (indoor worker)

- Table 5-2. It is assumed that the results of 1312 mg/kg soil are based on the described default values (see above). In general, this report should be more transparent as to specific values that were used or selected for each individual analysis in the footnotes of all of the tables provided.
- Uncertainty analysis of the IEUBK model. The most sensitive values for the IEUBK model are the GSD and the soil/dust intake values as reflected in tables 5-9 and 5-10. Usage of values other than the EPA default values has been an area of considerable controversy, and has generally been discouraged by the Agency in the absence of site-specific data. Based on the available analyses presented here, use of the EPA default values for both the GSD and soil/dust intakes greatly reduces the calculated residential RBCs.

Thank you for the opportunity to assist you in the review and consideration of this HHRA for the Rico Site. If you have additional questions or concerns please feel free to contact Dr. Jim Luey (303-312-6791) or myself at 303-312-7023.

Regards,



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